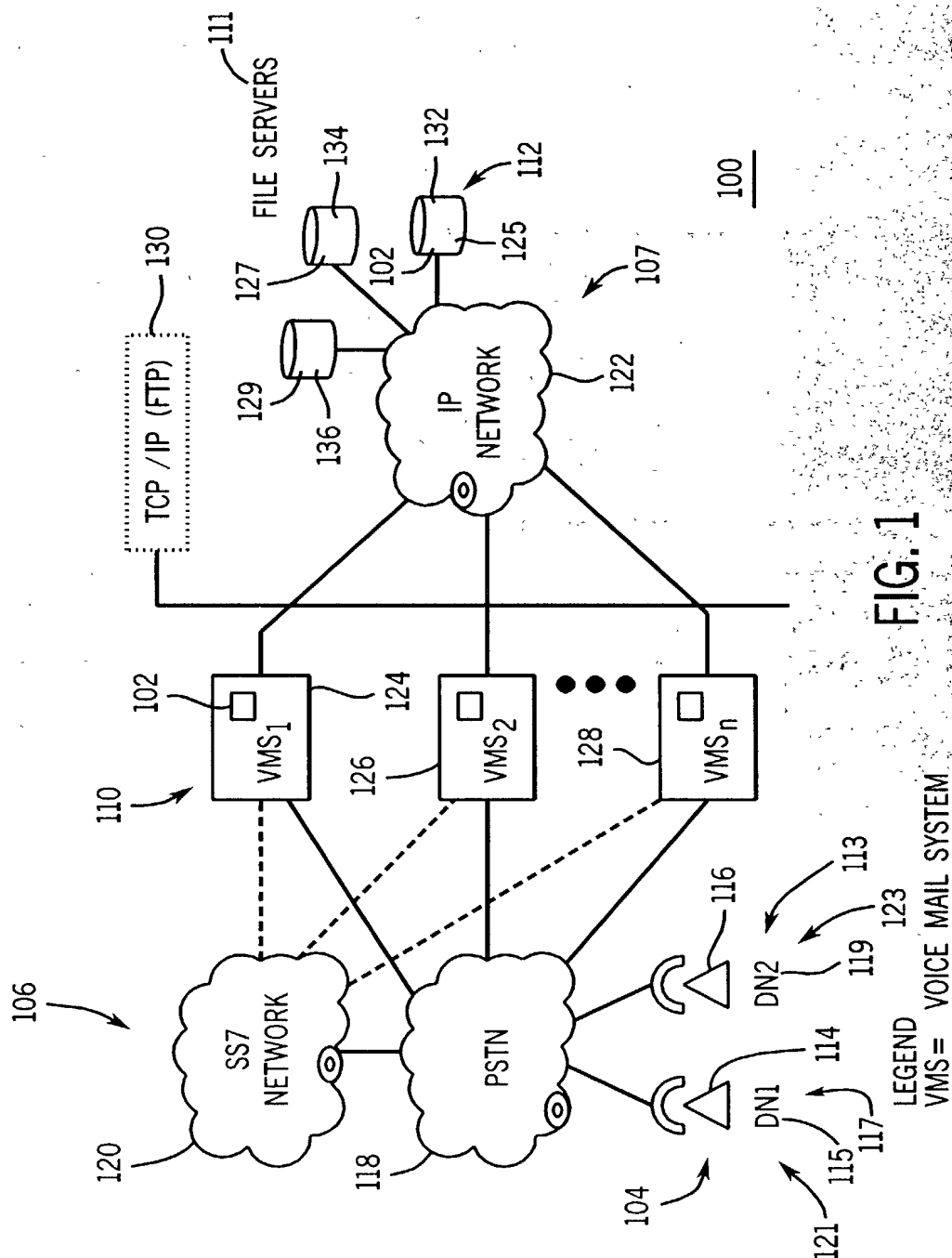GREEN 1-1-1-2-32
VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
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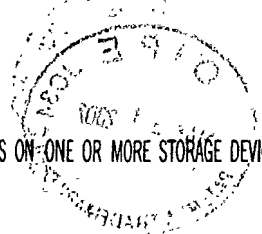FIG. 1

GREEN 1-1-1-2-32
VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
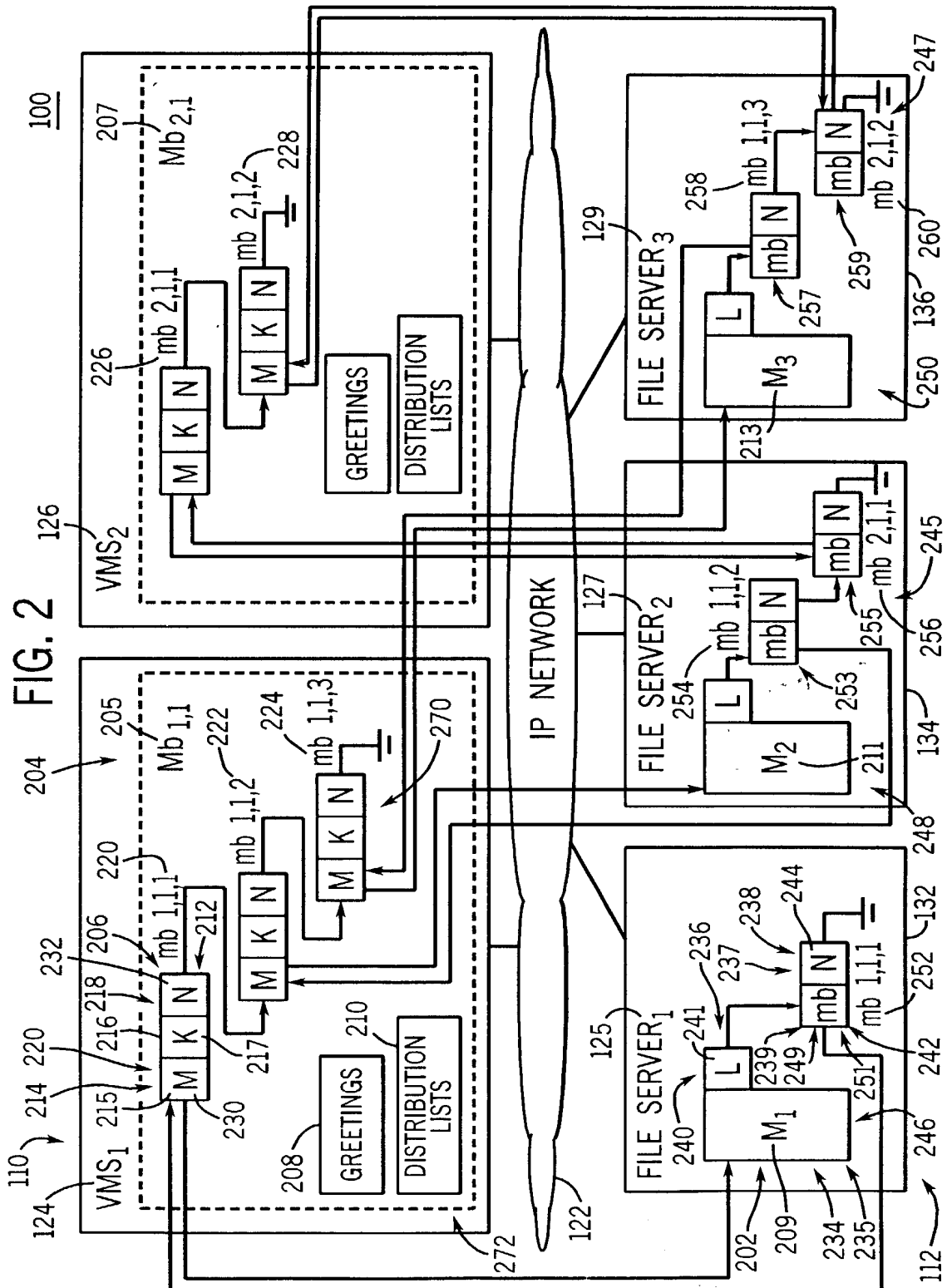ROBERT J. BRILL   TEL 312-346-2800

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FIG. 2

GREEN 1-1-1-2-32
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FIG. 3

GREEN 1-1-1-2-32
VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
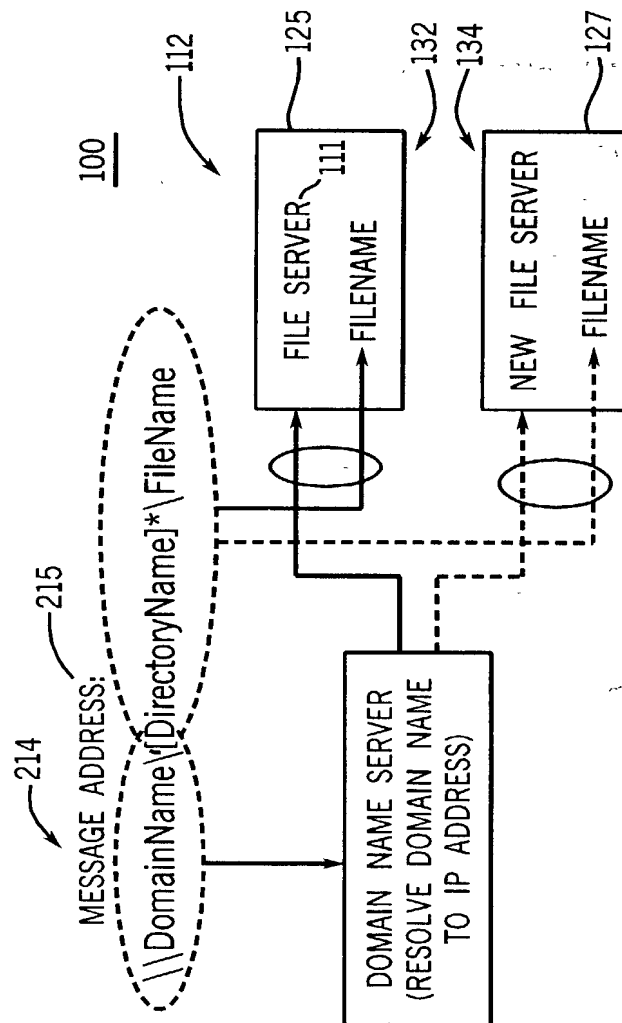ROBERT J. BRILL TEL 312-346-2800

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117

BROADCAST A MESSAGE —202   <u>100</u>

402 A SUBSCRIBER DIALS INTO A VOICE MAIL SYSTEM AND LOGS INTO
THE VOICE MAIL SYSTEM.

404 THE SUBSCRIBER RECORDS A MESSAGE (M3). THE MESSAGE
IS STORED ON A FILE SERVER (FILE SERVER 3).

406 THE SUBSCRIBER ELECTS TO BROADCAST THE MESSAGE TO
MORE THAN ONE VOICE MAIL BOX AND INCLUDES Mb 1,1 AND
Mb 2,1 IN THE BROADCAST LIST.

408 THE FILE SERVER (FILE SERVER 3) STORES THE MESSAGE (M3)
AND LINKS IT TO mb 1,1,3 IN A VOICE MAIL BOX (Mb 1,1) ON A
VOICE MAIL SYSTEM (VMS1) AND mb 2,1,2 IN A VOICE MAIL
BOX (Mb 2,1) ON A VOICE MAIL SYSTEM (VMS2). THE VOICE
MAIL SERVER (VMS2) CREATES AN ENTRY (mb 2,1,2) FOR THE
MAILBOX (Mb 2,1) THAT POINTS TO THE MESSAGE (M3). THE
VOICE MAIL SERVER (VMS1) CREATES AN ENTRY (mb 1,1,3) FOR
THE MAILBOX (Mb 1,1) THAT POINTS TO THE MESSAGE (M3).

410 THE SUBSCRIBER TERMINATES THE SESSION WITH THE VOICE
MAIL SYSTEM.

FIG. 4

400

GREEN 1-1-1-2-32
VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
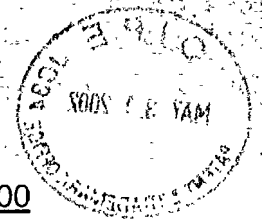ROBERT J. BRILL TEL 312-346-2800

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117

EDIT A MESSAGE /202   <u>100</u>

502 THE SUBSCRIBER REALIZES THAT INFORMATION BROADCAST IN A PREVIOUS MESSAGE IS INCORRECT.

504 THE SUBSCRIBER ACCESSES THEIR VOICE MAIL SYSTEM AND RETRIEVES THE BROADCAST MESSAGE (M3). THE MESSAGE IS MODIFIED AND STORED ON A FILE SERVER (FILE SERVER 3).

506 NOW THE CONTENT OF THE CHANGED MESSAGE (M3) "PROPAGATES" TO ALL VOICE MAIL BOXES (Mb 1,1 AND Mb 2,1) TO WHICH IT WAS PREVIOUSLY BROADCAST. IF THE MESSAGE HAD BEEN PREVIOUSLY LISTENED TO BY THE SUBSCRIBER OWNING THE VOICE MAIL BOX, THE MODIFIED MESSAGE IS MARKED AS NEW IN THE RESPECTIVE VOICE MAIL BOX.

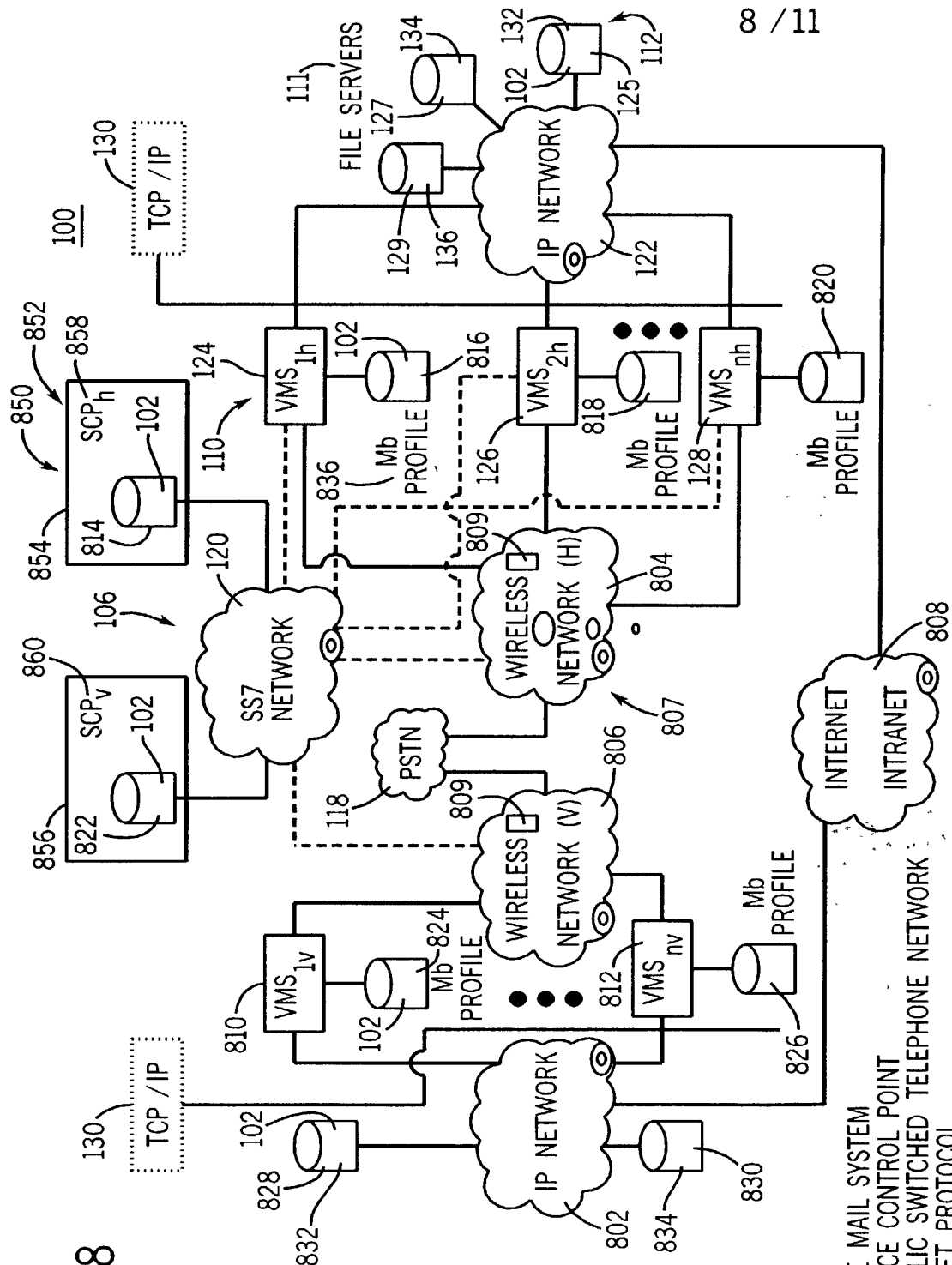508 THE SUBSCRIBER TERMINATES THE SESSION WITH THE VOICE MAIL SYSTEM.

FIG. 5

-500

GREEN 1-1-1-2-32
VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
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117

202

DELETE A MESSAGE

100

600 SUBSCRIBER (DN2) DIALS INTO THE VOICE MAIL SYSTEM (VMS1) AND LOGS INTO THE VOICE MAIL SYSTEM (VMS1).

602 THE SUBSCRIBER (DN2) IS NOTIFIED THAT THERE ARE 2 MESSAGES IN THE MAILBOX (Mb 1,1) (MESSAGE M1 AND MESSAGE M2 FROM THE PREVIOUS EXAMPLE).

604 THE SUBSCRIBER (DN2) SKIPS THE FIRST MESSAGE (M1) AND SELECTS THE NEXT MESSAGE (M2).

606 THE VOICE MAIL SYSTEM (VMS1) RETRIEVES THE MESSAGE FROM THE FILE SERVER (FILE SERVER 2) AND PLAYS THE MESSAGE (M2).

608 THE SUBSCRIBER (DN2) ELECTS TO DELETE THE MESSAGE (M2) FROM THEIR MAILBOX (Mb 1,1) ON VOICE MAIL SYSTEM (VMS1).

610 THE FILE SERVER (FILE SERVER 2) REMOVES THE LINK mb 1,1,2 FROM THE MESSAGE (M2). mb 1,1,2 IS REMOVED FROM THE VOICE MAIL BOX (Mb 1,1) EFFECTIVELY DELETING THE MESSAGE FROM THE VOICE MAILBOX (Mb 1,1). THE MESSAGE (M2) STILL REMAINS INTACT ON THE FILE SERVER (FILE SERVER 2) AND REMAINS LINKED TO ANOTHER MAILBOX (Mb 2,1) ON ANOTHER VOICE MAIL SYSTEM (VMS2).

612 THE SUBSCRIBER (DN2) TERMINATES THE SESSION WITH THE VOICE MAIL SYSTEM (VMS1).

614 SUBSCRIBER (DN1) DIALS INTO THE VOICE MAIL SYSTEM (VMS2) AND LOGS INTO THE VOICE MAIL SYSTEM (VMS2).

616 THE SUBSCRIBER (DN1) IS NOTIFIED THAT THERE ARE 2 MESSAGES IN THE MAILBOX (Mb 2,1) (MESSAGE M2 AND MESSAGE M3).

618 THE SUBSCRIBER (DN1) SELECTS THE FIRST MESSAGE (M2) AND LISTENS TO IT.

620 THE SUBSCRIBER (DN1) ELECTS TO DELETE THE MESSAGE (M2) FROM THEIR MAILBOX (Mb 2, 1) ON VOICE MAIL SYSTEM (VMS2).

622 THE FILE SERVER (FILE SERVER 2) REMOVES THE LINK mb 2,1,1 FROM THE MESSAGE (M2) AND DELETES THE MESSAGE (M2). mb 2,1,1 IS REMOVED FROM THE VOICE MAIL BOX (Mb 2,1) EFFECTIVELY DELETING THE MESSAGE FROM THE VOICE MAILBOX (Mb 2,1) ON THE VOICE MAIL SYSTEM (VMS2). THE MESSAGE (M2) IS NOW COMPLETELY DELETED FROM THE NETWORK.

624 THE SUBSCRIBER (DN1) TERMINATES THE SESSION WITH THE VOICE MAIL SYSTEM (VMS2).

FIG. 6

600

GREEN 1-1-1-2-32

VOICEMAIL SYSTEM COMPONENT EMPLOYMENT OF INTERNET PROTOCOL NETWORK TO STORE OR ACCESS ONE OR MORE VOICEMAIL MESSAGES ON ONE OR MORE STORAGE DEVICES
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107

MOVE A MAILBOX   100

/204

702 AN ADMINISTRATOR ELECTS TO MOVE A VOICE MAILBOX
    (Mb 1,1) FROM A VOICE MAIL SYSTEM (VMS1) TO LOAD
    BALANCE TWO VOICE MAIL SYSTEMS (VMS1 AND VMS2).

704 THE VOICE MAILBOX (Mb 1,1) IS MOVED FROM ONE
    VOICE MAIL SYSTEM (VMS1) TO THE OTHER (VMS2) BY
    MOVING THE LINKED LIST OF mb 1,1,1 AND mb 1,1,2 AND
    mb 1,1,3 TO THE DESTINATION VOICE MAIL SYSTEM
    (VMS2). ADDITIONALLY, STORED GREETINGS AND
    DISTRIBUTION LISTS ARE MOVED TO THE DESTINATION VOICE
    MAIL SYSTEM AS WELL (VMS2) FOR THE MOVED VOICE
    MAILBOX.

706 THE DESTINATION VOICE MAIL SYSTEM CREATES A NEW
    VOICE MAIL BOX (Mb 2,2) AND RENAMES mb 1,1,1 AND
    mb 1,1,2 AND mb 1,1,3 TO mb 2,2,1 AND mb 2,2,2
    AND mb 2,2,3 RESPECTIVELY.

708 THE FILE SERVERS (FILE SERVER 1, FILE SERVER 2, AND
    FILE SERVER 3) ARE INSTRUCTED TO RENAME AND RELINK
    mb 1,1,1 AND mb 1,1,2 AND mb 1,1,3 TO mb 2,2,1
    AND mb 2,2,2 AND mb 2,2,3 RESPECTIVELY.

710 THE MAILBOX MOVE IS COMPLETE.

FIG. 7

700

GREEN 1-1-1-2-32
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FIG. 8

LEGEND
VMS = VOICE MAIL SYSTEM
SCP = SERVICE CONTROL POINT
PSTN = PUBLIC SWITCHED TELEPHONE NETWORK
IP = INTERNET PROTOCOL
Mb PROFILE = MAIL BOX PROFILE

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FIG. 9

WIRELESS NETWORK — 807 100

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902 A WIRELESS SUBSCRIBER REGISTERS ON A WIRELESS NETWORK.

904 THE WIRELESS NETWORK CHECKS ITS HLR DATABASE TO DETERMINE IF THE SUBSCRIBER'S HANDSET IS REGISTERED TO THIS NETWORK.

906 IF THE HANDSET IS REGISTERED TO THIS NETWORK SKIP TO STEP 912.

908 IF THE HANDSET IS NOT REGISTERED TO THIS NETWORK THIS IS A SUBSCRIBER STARTING TO ROAM IN THIS NETWORK AND COOPERATING NETWORKS ARE QUERIED TO DETERMINE THE SUBSCRIBER'S HOME NETWORK.

910 THE COOPERATING WIRELESS NETWORK WITH WHICH THE SUBSCRIBER'S HANDSET IS REGISTERED RESPONDS TO THIS NETWORK AND PROVIDES A SET OF INFORMATION TO THIS NETWORK FROM THE HLR STORED IN THE HOME NETWORK. THIS INFORMATION IS KNOWN AS THE VLR.

912 SUCCESSFUL REGISTRATION USING THE HLR OR VLR TRIGGERS AN EVENT REPORT TO THE SCP IN THIS NETWORK. THE SCP IS INFORMED OF THE ADDRESS OF THE SUBSCRIBER'S VOICE MESSAGING SYSTEM. THE SCP CHECKS TO SEE IF THE PRESENT LOCATION OF THE VOICE MESSAGING SYSTEM IS OPTIMAL.

920

914 IF THE VOICE MESSAGING SYSTEM IS LOCATED IN AN OPTIMAL LOCATION, THEN SKIP TO STEP 918.

922

916 IF THE VOICE MESSAGING SYSTEM IS LOCATED IN A NON-OPTIMAL LOCATION AS DETERMINED BY THE SCP, THE SCP INSTRUCTS THE CURRENT VOICE MESSAGING SYSTEM TO TRANSFER THE SUBSCRIBER'S MAILBOX INFORMATION (NOT MAILBOX MESSAGE CONTENT) TO A MORE SUITABLE VOICE MAIL SYSTEM. THE SCP INSTRUCTS THE HOME WIRELESS NETWORK TO UPDATE THE HLR RECORD TO INCLUDE THE NEW VOICE MESSAGING SYSTEM LOCATION. THE INFORMATION MOVED IS GREETINGS, DISTRIBUTION LISTS, THE LIST OF ADDRESSES OF MESSAGES IN THE MAILBOX AND OPTIONAL MAILBOX SETTINGS. VOICE MESSAGES REMAIN STORED IN THEIR ORIGINAL FILE SERVER.

918 THE WIRELESS NETWORK IS NOW CONFIGURED TO HANDLE THIS SUBSCRIBER AND DELIVER UNANSWERED CALLS TO THE PROPER VOICE MESSAGING SYSTEM.

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807

WIRELESS NETWORK —117

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1002 NOW A CALL ARRIVES FOR THE SUBSCRIBER.

1004 THE SUBSCRIBER IS CURRENTLY ON A CALL, DOES NOT ANSWER IN A DETERMINED NUMBER OF RINGS, OR THE SUBSCRIBER IS PRESENTLY MARKED AS "DO NOT DISTURB".

1006 THE SCP RECEIVES NOTIFICATION OF THE EVENT IN 1004 CAUSING THE CALL TO BE UNANSWERED.

1008 THE SCP DIRECTS THE CALL TO THE PREVIOUSLY DETERMINED AND CONFIGURED VOICE MESSAGING SYSTEM.

1010 THE VOICE MESSAGING SYSTEM RECEIVES THE CALL FOR THE SUBSCRIBER'S MAILBOX, PLAYS THE SUBSCRIBER'S GREETING AND RECORDS A VOICE MESSAGE FROM THE CALLER.

1012 OPTIONALLY, A NOTIFICATION IS SENT TO THE SUBSCRIBER INFORMING THE SUBSCRIBER THAT A MESSAGE HAS BEEN LEFT IN THE SUBSCRIBER'S VOICE MAILBOX.

1014 WHEN CONVENIENT, THE SUBSCRIBER DIALS INTO THE SUBSCRIBER'S VOICE MESSAGING SYSTEM SUCH AS BY DIALING THE SUBSCRIBER'S OWN TELEPHONE NUMBER.

1016 THE SCP IS NOTIFIED WHEN THE SUBSCRIBER PLACES A CALL TO THE SUBSCRIBER'S SELF AND ROUTES THE CALL TO THE SUBSCRIBER'S VOICE MESSAGING SYSTEM.

1018 THE VOICE MESSAGING SYSTEM RECOGNIZES THIS AS A CALL FROM THE MAILBOX OWNER AND PROMPTS FOR A PASSWORD.

1020 THE SUBSCRIBER ENTERS THE CORRECT PASSWORD.

1022 THE VOICE MAIL SYSTEM PLAYS THE MESSAGE DEPOSITED IN THE VOICE MAILBOX.

1024 IF THE SUBSCRIBER WISHES TO PLAY PREVIOUSLY LEFT MESSAGES THOSE ARE ALSO ACCESSIBLE NO MATTER WHERE THEY WERE STORED.

1026 NOW THE ROAMING SUBSCRIBER RETURNS TO THE SUBSCRIBER'S HOME NETWORK. EMPLOYMENT OF ONE OR MORE PORTIONS OF EXEMPLARY LOGIC 900 OF FIG. 9 SERVES TO EFFECTIVELY MOVE THE SUBSCRIBER'S MAILBOX BACK TO THE SUBSCRIBER'S OWN HOME NETWORK.

FIG. 10

1000

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—803

100

WIRELINE NETWORK —117

1102 NOW A CALL ARRIVES FOR THE SUBSCRIBER.

1104 THE SUBSCRIBER IS CURRENTLY ON A CALL, DOES NOT ANSWER IN A DETERMINED NUMBER OF RINGS, OR THE SUBSCRIBER IS PRESENTLY MARKED AS "DO NOT DISTURB".

1106 THE SCP RECEIVES NOTIFICATION OF THE EVENT IN 1104 CAUSING THE CALL TO BE UNANSWERED.

1108 THE SCP CHECKS THE SUBSCRIBER'S ASSIGNED VOICE MESSAGING SYSTEM. IF THE VOICE MESSAGING SYSTEM IS CURRENTLY EXPECTED TO PROVIDE SATISFACTORY PERFORMANCE SKIP TO STEP 1112. ELSE CONTINUE WITH 1110.

1110 THE SCP ASKS THE CURRENTLY ASSIGNED VOICE MESSAGING SYSTEM TO TRANSFER THE SUBSCRIBER'S MAILBOX INFORMATION TO A NEWLY SELECTED VOICE MESSAGING SYSTEM.

1112 THE SCP DIRECTS THE CALL TO THE APPROPRIATE VOICE MESSAGING SYSTEM.

1114 THE VOICE MESSAGING SYSTEM RECEIVES THE CALL FOR THE SUBSCRIBER'S MAILBOX, PLAYS THE SUBSCRIBER'S GREETING AND RECORDS A VOICE MESSAGE FROM THE CALLER.

1116 OPTIONALLY, A NOTIFICATION IS SENT TO THE SUBSCRIBER INFORMING THE SUBSCRIBER THAT A MESSAGE HAS BEEN LEFT IN THE SUBSCRIBER'S VOICE MAILBOX.

1118 WHEN CONVENIENT, THE SUBSCRIBER DIALS INTO THE SUBSCRIBER'S VOICE MESSAGING SYSTEM SUCH AS BY DIALING THE SUBSCRIBER'S OWN TELEPHONE NUMBER.

1120 THE SCP IS NOTIFIED WHEN THE SUBSCRIBER PLACES A CALL TO THE SUBSCRIBER'S SELF AND ROUTES THE CALL TO THE SUBSCRIBER'S VOICE MESSAGING SYSTEM.

1122 THE VOICE MESSAGING SYSTEM RECOGNIZES THIS AS A CALL FROM THE MAILBOX OWNER AND PROMPTS FOR A PASSWORD.

1124 THE SUBSCRIBER ENTERS THE CORRECT PASSWORD.

1126 THE VOICE MAIL SYSTEM PLAYS THE MESSAGE DEPOSITED IN THE VOICE MAILBOX.

1128 IF THE SUBSCRIBER WISHES TO PLAY PREVIOUSLY LEFT MESSAGES THOSE ARE ALSO ACCESSIBLE NO MATTER WHERE THEY WERE STORED.

FIG. 11

—1100